ASBESTOS
BACKGROUND, HISTORY, USES
AND DEVELOPMENT OF THE
REGULATIONS

EXTENSIVE USE, EXTENSIVE LEGACY
We have used asbestos commercially for about 130 years in the U.S. – as much as 800,000 tons per year.
Most of it went into buildings – thousands of different products.
Most of that is still in buildings.
It is still installed legally today!

Asbestos Containing Material (ACM), a proven human carcinogen, exists in millions of buildings today in the United States. When those buildings are renovated or demolished, asbestos fibers become airborne. This results in an occupational exposure to the workers involved, and when waste is generated or handled, an ambient air exposure to the environment which may endanger the public health. Therefore this disturbance is heavily regulated by both EPA and OSHA.

Asbestos is the most heavily litigated hazardous material that we have to deal with in the hazardous material control industry.
As a result of all this, it is also the most heavily regulated hazardous material that we have to deal with.
Right or wrong, asbestos has the ability to put even the largest multi-billion dollar corporations into bankruptcy. There are about 250,000 lawsuits pending right now in the court systems in this country.

WHY IS ASBESTOS FOUND SO COMMONLY IN BUILDING MATERIALS?
PROPERTIES OF ASBESTOS

- Heat Resistance
- Incombustibility
- Sound Absorption
- Friction Resistance
- Mechanical Strength
- Wearability
- Water Resistance
- Electrical Resistance
- Chemical Resistance
- Bacterial Resistance
- Biological Resistance

In addition to all that, it was the most inexpensive additive available to accomplish any or all of these needs!

HEALTH EFFECTS

- Verified Human Carcinogen
- Huge populations exposed in:
  - Manufacturing
  - Application
  - Construction / Demolition
- Many illness cases and death
  - By 1970
- Lawsuits
- Congressional Attention

DECLINE OF USE

- OSHA and EPA began regulating ACM about 1970
- EPA bans high risk ACM by 1978 (TSI & Spray-on)
- Property damage liability defined by about 1978
- Generally went out of use by 1980
- Remains in most buildings today
- Substantial health threat to the construction industry

REGULATORY DEVELOPMENT

- Asbestos regs intensified by middle 80's
- Regulated thru TSCA in 1986 as an "Emergency Response Act" (AHERA)
  - Congressional intent was to inspect all buildings, identify ACM, manage safely
  - To have been implemented first in schools, then government buildings, then public and commercial
- New OSHA construction 1986 (OSH ACT)
- New NESHAP 1990 (Clean Air Act)
- New OSHA construction 1994 (OSH ACT)
- New MAP 1994 (ASHARA)

BASIC REGULATIONS

Since 1994, we have 4 basic regulations that work together to accomplish the congressional intent of asbestos management:

1. AHERA (Identification & Management in Buildings)
2. NESHAP (Demolition, Renovation & Disposal of Waste)
3. MAP (Certified People in occupied buildings)
4. OSHA (Worker Protection)

They are different – they are complimentary
(1, 2, & 3 are EPA rules for the protection of the public & the environment, and 4 is OSHA protection of workers from exposure)

High Risk = Friable and TSI ACM Heavily Regulated

EPA NESHAP:
- RACM
EPA AHERA:
- Response Action
EPA MAP:
- Response Action
OSHA:
- PACM (Class I Material)
FEDERAL ASBESTOS REGULATIONS

OSHA
- OSHA 29 CFR 1910.1001
- RESPIRATORY PROTECTION 29 CFR 1910.134

EPA
- NESHAP 40 CFR 61, Subpart M
- AHERA 40 CFR 763, Subpart E
- WORKER PROTECTION 40 CFR 763, Subpart G
- ASHARA (Model Accreditation Plan)

SCOPE & APPLICABILITY OF AHERA

APPLIES IN SCHOOLS
- Requires identification of all ACBM
- Requires safe management of ACBM
- Requires industry standards for inspection & management
- Contains the Model Accreditation Plan (appendix C)

SCOPE & APPLICABILITY OF MAP

APPLIES IN ALL BUILDINGS EXCEPT A SINGLE RESIDENTIAL BUILDING NO LARGER THAN 10 UNITS. ALL HOUSES ARE EXEMPT.
- Requires certification of inspectors
- Requires certification of persons who design or conduct response actions:
  - Project Designers
  - Contractor/Supervisors
  - Workers

SCOPE & APPLICABILITY OF NESHAP

APPLIES TO ALL FACILITIES EXCEPT A SINGLE RESIDENTIAL BUILDING HAVING 4 LIVING UNITS OR LESS.
- Requires removal of RACM about to be disturbed by DEMOLITION or RENOVATION
- Requires prior notification to EPA or delegated agency
- Requires proper management thru & after disposal
- Requires a thorough inspection before DEMOLITION or RENOVATION DISTURBANCE
- No visible emissions

REGULATORY “RULE OF THUMB”:
WHEN ACM IS DISTURBED
AHERA may or may not apply.
NESHAP may or may not apply.
MAP may not apply.
But:
OSHA WILL ALWAYS APPLY!
APPLICABILITY OF FEDERAL REGULATIONS BY FACILITY TYPE

SCHOOLS
PUBLIC/COMMERCIAL/INDUSTRIAL
RESIDENTIAL
MAINTENANCE

OSHA  
NESHAP  
AHERA  
MAP

LEVELS OF JURISDICTION

FEDERAL
STATE
COUNTY/AQD
LOCAL

CONTRACT SPECIFICATIONS

Health Effects of Asbestos Exposure

An update

Asbestos Death Trend in the US

CDC 1996 Report

Asbestos Death Trend in the US

CDC 2002 Report

Asbestos Death Trend in the US

CDC 2008 Report
TODAY, EARLY MORTALITY FROM ASBESTOS DISEASE IS MAINLY A CONSTRUCTION INDUSTRY PROBLEM DUE TO OCCUPATIONAL EXPOSURE TO ASBESTOS IN BUILDINGS.

THE HEAVY EXPOSURE FROM MANUFACTURING AND APPLICATION ENDED BY ABOUT 1980.

THE ON-GOING PROBLEM IS ASBESTOS IN PLACE IN BUILDINGS – MILLIONS UPON MILLIONS OF PUBLIC, COMMERCIAL, INDUSTRIAL AND RESIDENTIAL BUILDINGS IN THE UNITED STATES.

### EPA NESHAP
National Emissions Standard for Hazardous Air Pollutants

40 CFR 61 Subpart M

### MAJOR REQUIREMENTS
Before Demolition or Renovation

- INSPECT TO IDENTIFY ALL ASBESTOS
- NESHAP NOTIFICATION TO EPA
- REQUIRED REMOVAL BEFORE DISTURBANCE
- PROPER PROCEDURES FOR REMOVAL
- PROPER WASTE DISPOSAL
- WASTE SHIPMENT RECORDS

### NESHAP Facilities

ALL STRUCTURES, INSTALLATIONS, OR BUILDINGS EXCEPT RESIDENTIAL THROUGH 4 UNITS

INCLUDES SHIPS, WASTE SITES, PIPELINES, AND JUST ABOUT EVERYTHING ELSE

### REGULATED COMMUNITY

WASTE GENERATOR:
THE OWNER/OPERATOR OF A FACILITY PRODUCING ASBESTOS CONTAINING WASTE MATERIAL (ACWM)

(It’s the building owner and the contractor)
**REGULATED ACTIVITIES**

**DESTRUCTION OR RENOVATION IMPACTING OR CAUSING REGULATED ASBESTOS CONTAINING MATERIAL** (RACM)

**REGULATED ASBESTOS CONTAINING MATERIAL**

- **FRIABLE** and TSI ACM
  - Fireproofing
  - Popcorn Ceilings
  - Sprayed-on Acoustical
  - Pipe Insulation
  - Boiler Insulation
  - Duct Insulation

- Any Non-Friable that has deteriorated so that it may be pulverized or powdered by hand pressure
- Any Non-Friable that is sanded, ground or abraded mechanically

**NON-FRIABLE ACM CATEGORIES**

**CATEGORY I NON-FRIABLE**
RESILIENT/PLIABLE ASPHALTIC ROOFING, VINYL FLOORING, PACKINGS, AND GASKETS, IN GOOD CONDITION

**CATEGORY II NON-FRIABLE**
ALL THE OTHER NON-FRIABLE MATERIALS IN GOOD CONDITION

These materials are not regulated by the EPA NESHAP.

**THRESHOLD AMOUNTS OF RACM FOR DEMOLITION OR RENOVATION**

- **260 LINEAR FEET ON PIPE**
- **160 SQUARE FEET ON ALL OTHER SURFACES**
- **35 CUBIC FEET IF UNABLE TO MEASURE IN PLACE** (i.e., Waste Pile or Debris)

**RENovation BELOW THRESHOLD:**
NO REGULATION

**DemolITION BELOW THRESHOLD:**
DEMO NOTIFICATION ONLY

**NESHAP APPLICABILITY**

**DESTRUCTION**  
- NOTIFICATION  
- REQUIRED REMOVAL  
- WET METHODS  
- TRAINED PERSON  
- LEAK-TIGHT WASTE  
- LABELING  
- PROPER DISPOSAL  

RACM: 260 Linear Ft. 160 Square Ft. 35 Cubic Ft.

**RENOVATION**  
- NOTIFICATION  
- REQUIRED REMOVAL  
- WET METHODS  
- TRAINED PERSON  
- LEAK-TIGHT WASTE  
- LABELING  
- PROPER DISPOSAL

**61.150 WASTE DISPOSAL:**

(a) No visible emissions  
  - Adequately wet  
  - Leak-tight containers  
  - Label containers  
  - Cat. I and Cat. II exemptions

(b) Disposal at approved site ASAP  
  - Cat. I exemption (and Cat. II)

(c) Mark waste vehicles loading & unloading

(d) Waste Shipment Record for transport off generator site

(e) WSR available upon request
The Asbestos Institute (Quebec, Canada) reports that Chrysotile cement represents between 85 and 90% of the market for Chrysotile asbestos, and that 23 million metric tons of asbestos was used in Europe for post war construction. It follows that the installed base of asbestos cement products worldwide is enormous and continues to grow. In other words, the problem of exposure to asbestos fibers from working with these materials is substantial, and will remain significant for the foreseeable future.

### NESHAP

1. Demolition vs Renovation
2. Category II vs RACM
3. Waste handling
   a. Regulations vs Best Work Practices

### OSHA

1. Class II Work
2. Class III Work
3. Training
4. Competent Person
   a. NEA
   b. Regulated Area
   c. Work Procedures

Major OSHA Compliance Inspection Issues:
- NEA
- Work Procedures
  1. Wet
  2. HEPA-vac
  3. Prompt containing of waste
- Notification of Hazards
- Training

**PROHIBITIONS**

- Do not crush or make friable
- Do not use pipe bursting
- Do not use pipe reaming
- Do not use a “chop saw”
- Do not leave broken pipe in the trench
- Do not make Category II Non-friable into RACM
- Do not make Brian mad!!!

Complying with these rules will avoid NESHAP applicability.

### REQUIREMENTS

- Have a Competent Person
- Develop a Negative Exposure Assessment
- Get training for employees
- Regulate the area
- Always use wet methods
- Contain the broken pieces in a container
- Label the container (use a labeled bag)

These are OSHA requirements, and they are not burdensome. They are for your protection.

The best way I know to disturb transite pipe:
ARIZONA OSHA PROGRAMS

Compliance vs Consultation

Compliance
- 5 reasons that warrant an inspection:
  - Fatality
  - Complaint
  - Referral
  - Emphasis
  - Program Planned
- Citations are issued 2 types
  - Non-serious vs. Serious
- Asbestos
  - 29 CFR 1910.1001
  - 29 CFR 1926.1101
  - Other standards to comply with when working with asbestos
  - www.osha.gov

Consultation
- FREE consultation services (on-site surveys, program development, safety and health literature, construction partnerships, Recognition programs, and training)
- Don’t issue citations. They are there to help you.
- 3 types of programs:
  - SHARPS (Safety and Health Achievement Recognition Program) - General Industry and Construction with fewer than 250 employees
  - VPP (Voluntary protection Program) - larger companies
  - RRAP (Rate reduction awareness program) - For general industry and Construction

Training
- FREE Training and advice
- Training
  - Jenny Mandeville (602) 542-1640
- Consultation Services
  - (602) 542-1769
- ADOSH Advocate (Quarterly newsletter)
  - http://www.azic.gov

OSHA ISSUES

A common comment:
‘I thought that the asbestos regulations had gone away. Hasn’t the use of asbestos been banned by the government for the last 20 years?’

3 reasons why we can expect the OSHA asbestos regulations to continue, and perhaps become more stringent, not less:

1. All the buildings contain ACM

Millions upon millions of buildings:
public, commercial, industrial and residential
The heavy impact that early mortality from asbestos exposure has had on the construction industry

2. ASBESTOS PRODUCTS CURRENTLY USED IN NEW CONSTRUCTION

Imported construction materials
- Transite pipe
- VAT
- Roof sealant / Paint
- Fiber for masonry work
- Gaskets

OSHA
Asbestos Regulations
For The Construction Industry

Main Intent of OSHA Regs: No Exposure

PEL

Exposure

0.1f/cc TWA

No Exposure

1.0f/cc EL

OSHA Presumed Asbestos Containing Material (PACM)
(A better way to protect workers)

PACM: TSI and Surfacing thru 1980

PACM

ACM Floor Tile

ACM/Non-ACM

1890 1980 Today

First of all, the OSHA regulation on asbestos in the construction industry is directed to owners and employers involved in “Construction” as defined by paragraph (a) in 29 CFR 1926.1101: “Scope and application”.

It is not a regulation directed only to the “asbestos abatement” industry as a specialty contractor group!
It is a pro-active regulation that requires controls to keep "construction" employees safe when working on a site that contains ACM or asbestos. Most of the controls required are in lieu of measured airborne asbestos exposure. THEY ARE TO KEEP ASBESTOS EXPOSURE FROM HAPPENING.

The pro-active requirements are:
1. Competent Person in control of work site.
2. Identify asbestos at a site before work begins.
3. Notify those in control.
4. Regulated areas for any disturbance.
5. Negative Exposure Assessments for all work.
6. Specified work practices for all work.
7. PPE for Class I Work.
8. Decontamination for Class I Work.
9. Signage and labeling for ACM.
10. Training of employees.
11. Medical Surveillance for respirator use.

These controls are required because of ACM in the work project – not because there has already been exposure.

These are required controls to keep asbestos exposure from happening. They are necessarily pro-active.

**CLASSES OF WORK**

<table>
<thead>
<tr>
<th>CLASSES OF WORK</th>
<th>DEFINITIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class I Work</td>
<td>The removal of TSI, fireproofing or popcorn</td>
</tr>
<tr>
<td>Class II Work</td>
<td>The removal of anything else</td>
</tr>
<tr>
<td>Class III Work</td>
<td>The small scale, short duration disturbance of ACM</td>
</tr>
<tr>
<td>Class IV Work</td>
<td>Contact, but no disturbance, or cleanup of previously generated debris</td>
</tr>
</tbody>
</table>

**APPLICATION**

- **Class I Work**
  - Requires NPE or glovebags, shower decon, full PPE, certified people, air monitoring, Negative Exposure Assessment (NEA)
- **Class II Work**
  - No initial NPE, NEA exemptions for shower decon, PPE, certified workers, air monitoring. One day training.
- **Class III Work**
  - Requires PPE for TSI & Surfacing. NEA exemptions for all other ACM. Two day training. SS, SD only.
- **Class IV Work**
  - Requires NEA, all exemptions allowed. 2 hour training required.

**CONTRACTOR ISSUES**

The Permissible Exposure Limit:
- TWA 0.1 f/cc
- EL 1.0 f/cc

Comply with all the pro-active requirements.

Do not allow workers to be "exposed".
BUILDING OWNER ISSUES

- PACM: TSI & Surfacing thru 1980
- Resilient Flooring thru 1980
- Due diligence responsibility
- Notifications
- Recordkeeping.

(k) COMMUNICATION OF HAZARDS

WORKER TRAINING:

- CLASS I: AHERA Worker Accreditation
- CLASS II: 8 hr. specific
- CLASS III: AHERA 16 hr. O & M
- CLASS IV: AHERA 2 hr. awareness

Training required prior to work and annually thereafter.

The main issues of non-compliance likely to be cited are:

NEA
3 basic work controls
Notification
Training

(q) DATES

The final rule became effective October 1, 1995
The regulated community is in either compliance or non-compliance as of that date.

Training and Work Practices

OSHA
(and some EPA)

Training
And
Work Practices

OSHA and EPA Training and Work Requirements for Individuals Performing Asbestos Work
WORK PRACTICES

EPA NESHAP (RACM)
• Thorough Inspection
• Notification
• No visible emissions
• Certified Supervisor
• Wet
• Contain waste
• Label waste container
• NESHAP Landfill

EPA AHERA (Response Action)
• Specifications
• Certified Supervisor
• Certified Worker
• Final Clearance

OSHA
(g) Methods of Compliance:
(g)(1) Wet methods, HEPA Vac, Prompt containment of waste
(g)(2) What to do if PEL is exceeded
(g)(3) Prohibitions
(g)(4) Class I Removal: Basic requirements
(g)(5) 6 Specific Control Methods (OSHA specs)
(g)(6) Alternative Controls for Class I (Contractor specs)
(g)(7) Class II Removal: Basic requirements
(g)(8) Class II control methods by material (OSHA specs)
(g)(8)(vi) Alternative Controls for Class II (Contractor specs)

TRAINING

OSHA: 29 CFR 1926.1101(k)(9): Removal of ACM
Class I Work: EPA/Cal-OSHA Certified Supervisor and Worker
Class II Work: EPA/Cal-OSHA Certified Supervisor and OSHA Worker

EPA: 40 CFR 61.145(c)(8): RACM above threshold:
EPA/Cal-OSHA Certified Supervisor

EPA: 40 CFR 763 appendix C: Response Action Work:

AHERA Training

Asbestos Inspections ➔ AHERA Asbestos Building Inspector (24 Hrs.)
Management Plans ➔ AHERA Management Planner (16 Hrs.)
Design Project Specifications ➔ AHERA Project Designer (32 HRS.)
Supervisors ➔ AHERA Contractor/Supervisor (40 Hrs.)
Workers ➔ AHERA Worker (32 Hrs.)

OSHA Training Requirements

<table>
<thead>
<tr>
<th>Class of Work</th>
<th>Employee</th>
<th>Competent Person</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class I</td>
<td>32 Hour AHERA Certified Worker</td>
<td>40 Hour AHERA Contractor/Supervisor</td>
</tr>
<tr>
<td>Class II</td>
<td>8 Hour OSHA Specific Training</td>
<td>40 Hour AHERA Contractor/Supervisor</td>
</tr>
<tr>
<td>Class III</td>
<td>16 Hour O&amp;M Training</td>
<td>16 Hour O&amp;M Training</td>
</tr>
<tr>
<td>Class IV</td>
<td>2 Hour Awareness</td>
<td>16 Hour O&amp;M Training</td>
</tr>
</tbody>
</table>

EPA NESHAP Training

- The Asbestos NESHAP states that:
  - No RACM shall be stripped, removed or otherwise handled or disturbed in a facility unless at least one on-site representative trained in the provisions of this regulation is present.
- EPA has stated that the Trained On-site Representative is an individual trained as an AHERA Contractor/Supervisor
Summary

- OSHA and EPA require training at some level for all asbestos work
- Asbestos work includes all work from large abatement activities to maintenance/custodial activities where employees do not disturb ACM but work in the vicinity of ACM
- Properly trained employees are an owner's and an employer's best insurance against liability on their work site

AHERA COMPLIANCE

40 CFR 763, Subpart E
For Public, Private and Charter School

MAJOR OBJECTIVES OF AHERA

1. IDENTIFICATION OF ALL ACBM for the purpose of:
2. ASSESSMENT OF FRIABLE & TSI ACBM so that ACBM may be:
3. MANAGED SAFELY IN THE BUILDING

AHERA FACILITIES:
SCHOOLS

- KINDERGARTEN - 12
- PUBLIC AND PRIVATE
- NOT FOR PROFIT
- CHARTER SCHOOLS

AHERA REQUIREMENTS
40 CFR 763
763.84: BUILDING OWNER RESPONSIBILITIES
.85: INSPECTIONS AND REINSPECTIONS
.86: SAMPLING
.87: ANALYSIS
.88: ASSESSMENTS
.90: RESPONSE ACTIONS
.91: OPERATIONS AND MAINTENANCE
.92: TRAINING AND PERIODIC SURVEILLANCE

Regulatory Responsibility

- Basic regulatory responsibility lies with the Local Education Agency (LEA) which means the school owner.
- “LEA’s may contractually delegate their duties under this rule, but they remain responsible for the proper performance of those duties.” [743.80(a)]
AHERA REQUIREMENTS
40 CFR 763 (cont.)
763.93: MANAGEMENT PLANS
.94: RECORDKEEPING
.95: WARNING LABELS
.97: COMPLIANCE AND ENFORCEMENT
.98: WAIVER
.99: EXCLUSIONS

A PICTURE OF AHERA
INSPECT ALL BUILDINGS
SUSPECT ACBM
ASSUMED ACBM
NOT ASSUMED ACBM
SAMPLED
>1% ASBESTOS
1% or less ASBESTOS

A PICTURE OF AHERA (cont.)
FRIABLE TSI
NON-FRIABLE
ASSESS PHYSICAL CONDITION
O & M MGT. PLAN SURVEILLANCE REINSPECT

A PICTURE OF AHERA (cont.)
RESPONSE ACTIONS

A WHOLE PICTURE OF AHERA
(Occupied Buildings)

A WHOLE PICTURE OF NESHAP
(Demolition & Renovation)

Compare to:
ACM
REMOVAL
AHERA REGULATORY CONCEPTS

• ACCREDITATION
• ASBESTOS INSPECTION PROTOCOL
• NVLAP CERTIFIED LABORATORIES
• FORMAL PROJECT DESIGN
• RESPONSE ACTIONS
• O & M PROGRAMS
• FINAL CLEARANCE

Thank You For Your Attention

Please feel free to contact any of our speakers for help with asbestos questions or regulations.